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EXAMINER

CLARK, MAYA ANGELICA

ART UNIT

PAPER NUMBER

3742

MAIL DATE

DELIVERY MODE

04/23/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/598,622	Applicant(s) RIPPL ET AL.	
	Examiner MAYA CLARK	Art Unit 3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10-27 is/are pending in the application.
- 4a) Of the above claim(s) 1-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 9/6/2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/6/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicants timely traversed the restriction (election) requirement in the reply filed on 8/21/2009. Applicant's election with traverse of Group II in the reply filed on 8/21/2009 is acknowledged. The traversal is on the ground(s) that "the process involves the special technical feature of controlling the power of a laser source based on the motions of a laser beam, the device claims including a laser source wherein the power of the laser source is controlled as a function of the motions of the laser beam. As such, it is believed that the process comprises the same special technical features of the device. Further, as the process and the device relate to the single inventive concept of laser machining workpieces". Applicant's arguments have been fully considered and are persuasive. The restriction (election) requirement has been withdrawn. Claims 1-27 are now pending.

Specification

2. The disclosure is objected to because of the following informalities: the title of the invention is too long. It must be as short and specific as possible preferably from two to seven words with no more than 500 characters. Regarding, paragraph 0020, there should be no reference to the claims in the disclosure. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

Art Unit: 3742

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. In general, the reference characters used in claims 1, 5, 9, 10, 14, and 23 should be removed for consistency purposes.

Regarding claim 1, the recitation "...is directed towards the workpiece" (lines 3-5) renders the claim indefinite. It is not clear as to the component/portion that "is directed towards the workpiece". Is it the laser beam, the guide means, the laser tool or the manipulator? Clarification is needed. The recitation "at a contact-free distance floatingly above the workpiece" (line 7) can not be fully understood. Such distance must be clearly defined since the term "floatingly" is a relative term which renders the claim indefinite. The term "floatingly" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. There is insufficient antecedent basis for "the workpiece" (recited at lines 5 and 7) in the claim since as noted in the preamble, there are more than one workpiece recited. There is also insufficient antecedent basis for "**the motions** of said laser beam" (recited at line 11) in the claim. It is unclear as to what type of motions (i.e. rotational, displacing, or deflecting motion, or the hand, ...) the applicants are referring to.

6. Regarding claim 2, there is insufficient antecedent basis for the following recitations: "said workpiece" (recited at line 3), "said beam deflection motion" (recited

Art Unit: 3742

at line 3), and “said displacing motion” (recited at line 4) in the claim or from the preceding claim.

Regarding claim 3, there is insufficient antecedent basis for “said superimposed beam deflection motion” (recited at line 3) in the claim or from the preceding claim 1. The term “essentially continuous displacing motion” (recited at line 2) is a relative term which renders the claim indefinite. The term “essentially” is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

7. Regarding claim 5, **the recitation of “with which program and data bank said motions to be carried out by...” at line 3 is vague and can not be clearly understood. There appears to have a missing text between “data bank” and “said motions”. There are insufficient antecedent bases in the claim or from the preceding claim for the following recitations: “said motions” (recited at line 3), “said laser process parameters” (recited at line 4), “said memory” (recited at lines 5-6), and “said control” (recited at line 6).”**

8. Regarding claim 6, there are insufficient antecedent bases in the claim or from the preceding claim for the following recitations: “said power” recited at line 2, “said displacing and beam deflecting motions” recited at lines 2-3, and “said workpiece” recited at line 4.

Art Unit: 3742

9. Regarding claim 7, there are insufficient antecedent bases in the claim or from the preceding claim for the following recitations: “said workpiece data”, “said operator”, and “said control” (recited at line 2).

10. Regarding claim 8, there are insufficient antecedent bases in the claim or from the preceding claim for the following recitations: “said workpiece” (line 2) and “said control” (line 3).

11. Regarding claim 10, the recitation of “body parts workpiece” (recited at line 2) in the preamble is confused and therefore the term “workpiece” should be deleted and its latter recitation on line 8 (i.e., said workpiece) should be replaced with “said bodies and parts”. The term “can be” recited at lines 5, 9, 10, and 11 should be replaced with “is” for positive recitation. It is noted that there were two laser tools recited (at line 6, i.e., “laser tool and at line 7, i.e., “a remote laser tool”). It is unclear if these two tools were intended to be the same. Clarification is needed. The phrase “guides same floatingly at” recited at line 8 renders the claim indefinite because it is unclear for what “same floatingly” means. There are also insufficient antecedent bases in the claim for the following recitations: “said motion of hand axes” (lines 9-10), “said laser beam” (lines 10 and 12), and “said power” (line 11).

12. Regarding claim 11, there is insufficient antecedent basis for “said beam deflecting motion” (recited at line 3) in the claim or from the preceding claim.

13. Regarding claim 12, there is insufficient antecedent basis for the following recitation “said superimposed beam deflecting motion”(recited at line 3).

Art Unit: 3742

14. Regarding claim 14, there is insufficient antecedent basis for: "said motions" (recited at line 5). It is unclear as to what type of motions (i.e., rotational, displacing, or deflecting motion, or the hand,...) the applicants are referring to. There is also insufficient antecedent bases for "said laser process parameters" (recited at line 6), and "said basis of input workpiece data" (recited at line 7).

15. Regarding claim 15, there is insufficient antecedent basis for the following recitations: "said power" (recited at line 2) and "said displacing and beam deflecting motions" (recited at lines 2-3). Furthermore, the recitation "can be" (recited at line 3) should be replaced with "is" for positive recitation.

16. Regarding claim 16, there is insufficient antecedent basis for "said control" (recited at line 2).

17. Regarding claim 17, there is insufficient antecedent basis for "said portable data storage media" (recited at line 3).

18. Regarding claim 18, there is insufficient antecedent basis for "said laser" (recited at line 2). The examiner suggests that "said laser" be replaced with "laser source".

19. Regarding claim 19, there is insufficient antecedent basis for "said workpieces" (recited at line 3).

20. Regarding claim 20, the recitation "can be" (recited at line 3) should be replaced with "is" for positive recitation.

21. Regarding claim 23, the recitation "can be" (recited at line 2) should be replaced with "is" for positive recitation.

Art Unit: 3742

22. Regarding claim 25, there is insufficient antecedent basis for the following recitations: "said laser tools" (recited at line 3) and "said different laser tools" (recited at line 4).

23. Regarding claim 27, there is insufficient antecedent basis for "said rotatory hand axes" (recited at line 2).

Claim Rejections - 35 USC § 103

24. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

25. Claims 1, 4, 5, 8, 10, 13, 14, 18, 20-22, 26, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akeel (US Re.34597) in view of lehisa (US 6555784 B2).

Regarding claims 1 and 10, Akeel discloses a laser device for laser machining, including the laser welding of automobile parts comprising (Akeel-col.1, lines 66-68; col.1, lines 47-52; col.2, lines 1-4):

a six-axis manipulator i.e. robot (Akeel-col.4, lines 27-40);

a laser source that generates a laser beam (Akeel-col.4, lines 52-55);

wherein said manipulator can be controlled in terms of said motion of its hand axes such that said laser beam can be deflected by variable deflection angles with respect to the mirrors attached to the robot (Akeel-col.4, lines 33-64);

a focusing lens with a longer focal length i.e. distance (Akeel-col.2, lines 29-31).

Akeel also discloses that a laser can be mounted on the top of an articulated arm-robot and that the laser power can be variably controlled (Akeel-col.2, lines 17-18 and col.1, lines 38-46) but fails to disclose wherein said laser source can be connected via a guide means to one laser tool at said one six-axis manipulator; wherein said manipulator holds a remote laser tool with a focal distance and guides same floatingly at a contact-free distance above said workpiece along a machining path; wherein said manipulator can be controlled in terms of said motion of hand axes such that said laser beam can be deflected by variable deflection angles and wherein said power of said laser source can be controlled variably and as a function of motions of said laser beam.

lehisa et al (hereinafter lehisa) discloses a laser machining apparatus for performing machining operations such as welding and cutting on a vehicle body positioned on a manufacturing line (lehisa-col.2, lines 61-67; lehisa-col.3, lines 39-54; lehisa-col.6, lines 41-42) comprising:

At least one manipulator i.e. robot (RB1 to RB8-fig.1 below);

A laser supply station (LSS) which can subsequently be connected by way of a guide means (F1) to at least one laser tool (TL1 to TL8) at said at least one manipulator (RB1 to RB8) (refer to fig.1 below for all reference characters);

At least one optical element with a changeable/variable position used to determine the desired focal length/distance (A-fig.7 below);

At least one optical element so that said laser beam can be deflected/reflected with respect to various deflected/reflected angles (lehisa-col.4, lines 40-67).

FIG. 1

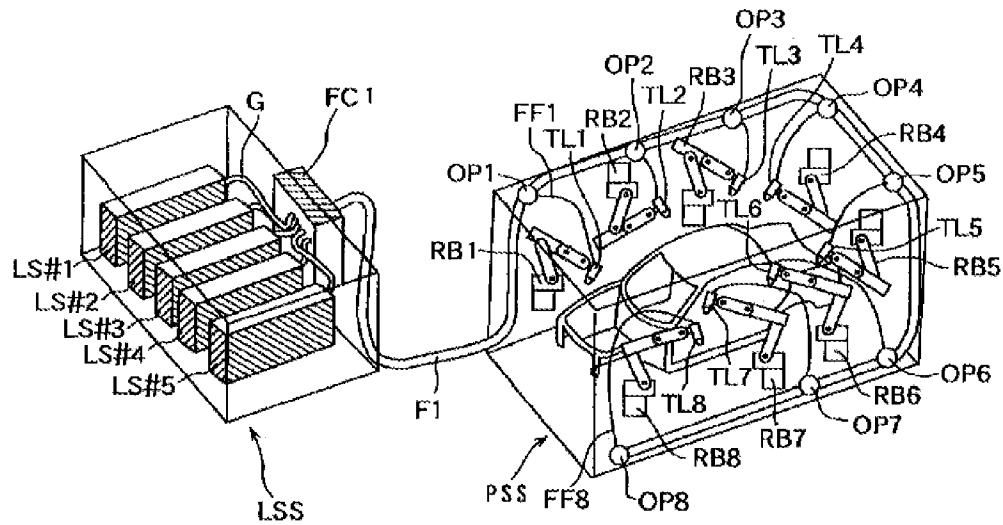
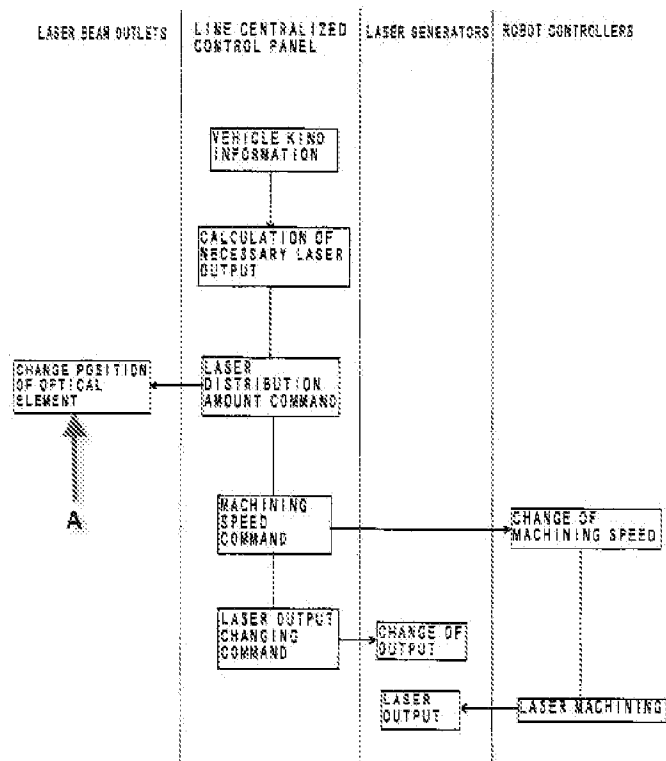


FIG. 7



lehisa further discloses a centralized control panel that controls the laser outputs of the laser generator as a function of the laser beam outputs that are required by the respective machining tools based on the workpiece-type information (lehisa-col.6, lines 66-67 and lehisa-col.7, lines 1-2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate lehisa's robotic/laser tool aspect into Akeel to provide more control over the robotic laser machining process.

Regarding claims 4 and 13, Akeel in view of lehisa discloses a laser device wherein said laser source and said manipulator have a common control (lehisa-col.6, lines 34-37 and lehisa-col.6, lines 45-49).

Regarding claims 5 and 14, Akeel in view of lehisa discloses wherein said control has at least one said computer and at least one memory with one or more programs and with at least one technology data bank, with which program and data bank said motions to be performed by said manipulator and said laser process parameters can be automatically determined and carried out on said basis of input workpiece data (lehisa-col.6, lines 29-44 and lehisa-col.6, lines 59-65).

Regarding claims 8 and 18, Akeel in view of lehisa discloses a laser device where said laser supply station (LSS-fig.1 from claim 10) has one or more tools (TL1 to TL8-fig.1 from claim 10) for said workpiece, which are connected to said control (lehisa-col.6, lines 45-49).

Regarding claim 20, Akeel in view of lehisa discloses a laser device wherein said guide means (i.e. guide system) has a modular/flexible/fiber cable design and has

Art Unit: 3742

a plurality of conductor sections (G,F1) that can be connected to a coupling connection (FC1) (refer to fig.1 from claim 10 for all reference characters).

Regarding claims 21 and 22, Akeel in view of lehisa discloses wherein said guide means is designed as a fiber optic cable and said laser supply station/source is designed as a either a YAG or fiber laser (i.e. light in which the medium is an optical fiber) (lehisa-col.3, lines 13-17; lehisa-col.2, lines 46-48).

Regarding claim 26, Akeel in view of lehisa discloses a laser device wherein said manipulator is designed as a multiaxial industrial robot, comprising a six-axis articulated arm robot with said axes (Akeel-col.4, lines 37-49).

Regarding claim 27, Akeel in view of lehisa discloses a laser device wherein said hand has three said rotary hand axes (Akeel-col.4, lines 37-49).

26. Claims 7, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aheel in view of lehisa and Ishiguro (US 4831316).

Regarding claims 7, 16 and 17, Aheel in view of lehisa discloses that an operator controls the robot-laser system (Aheel-col.7, lines 47-63) but fails to disclose a laser device wherein said control has an input unit (i.e. keyboard and/or drive for said portable data storage media and/or at least one interface for a data line) for inputting workpiece data by an operator on site.

Ishiguro et al (herein after Ishiguro) discloses a robot system comprising: a six-axis robot for machining a workpiece by means of a laser beam; a robot controller; a teaching box i.e. computer station for permitting an operator to teach the robot in

Art Unit: 3742

advance of how to proceed with the job; a keyboard; an external memory device; a bus line (Ishiguro-col.4, lines 10-25 and Ishiguro-col.6, lines 46-58).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Ishiguro's input devices so that the operator can upload data into the computer of the robotic laser system.

27. Claims 2, 3, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aheel in view of lehisa and Briand (US 6603092 B2).

Regarding claims 2 and 11, Aheel in view of lehisa discloses that the 6-axis manipulator is capable of guiding a laser beam (Aheel-col.7, lines 47-48) but fails to disclose wherein said beam deflecting motion of said hand axes is superimposed to said displacing motion.

Briand et al (hereinafter Briand) discloses a process for welding metal workpieces intended for the motor-vehicle industry (Briand-entire abstract). Briand discloses that said welding process involves the use of robots and a laser beam deflection motion during said welding (Briand-col.3, lines 4-9; col.6, lines 11-27).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Briand's laser beam deflection motion into Aheel in view of lehisa's device so that the deflecting motion of said hand axes is superimposed relative to said displacing motion.

Regarding claims 3 and 12, Aheel in view of lehisa and Briand discloses that said

Art Unit: 3742

deflected beam in a now superimposed state can be directed relatively opposite said motion relative to the welding process (Briand-col.6, lines 60-67).

28. Claims 6 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aheel in view of lehisa, Briand, and Hamada (US 6888096 B1).

Regarding claims 6 and 15, Aheel in view of lehisa and Briand fails to disclose a laser device wherein said laser source and said displacing and beam deflecting motions to be performed by said manipulator can be determined and controlled according to section energies to be introduced into said workpiece.

Hamada discloses a controllable laser oscillator based machining apparatus with the ability to generate a cross-sectional energy distribution. (Hamada-col.7, lines 22-28; col.9, lines 1-4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Hamada's cross sectional energy distribution into Aheel in view of lehisa and Briand's device so that said displacing and beam deflecting motions to be performed by said manipulator can be determined and controlled according to section energies to be introduced into said workpiece.

29. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aheel in view of lehisa and Shah (US 6486436 B1).

Aheel in view of lehisa fails to disclose a laser device wherein said tools are designed as clamping tools and/or as a conveying means for said workpieces.

Art Unit: 3742

Shah et al (hereinafter Shah) discloses a multi-axis robotic laser machining system with a clamping system being a part of said laser machine tool (Shah-col.2, lines 66-67; col.3, lines 1-3; col.3, lines 43-48; col.3, lines 57-61).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Shah's clamping system into Aheel in view of lehisa's device so that said tools can have a clamping means.

30. Claims 9, 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aheel in view of lehisa and Ortiz, Jr. (US 5245682).

Art Unit: 3742

Regarding claims 9, 23, and 24, Aheel in view of lehisa fails to disclose a laser device-wherein said laser tool has a focal distance that can be switched or adjusted and said focal distance is greater than 300 mm.

Ortiz, Jr. discloses a laser processing system consisting of a controller, laser head, manipulator, optical fiber, and various lenses of varying focal lengths. Ortiz, Jr. discloses that said laser processing system has the means to switch/change its focal distance based on the lens that is selected. Ortiz, Jr. also discloses that a lens greater than 300mm can be selected so that a focal distance greater than 300mm is produced (Ortiz,Jr. col.4, lines 44-60)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Ortiz,Jr's focal lenses into Aheel in view of lehisa's device so that said laser tool can have a focal distance that is both changeable/adjustable and greater than 300mm.

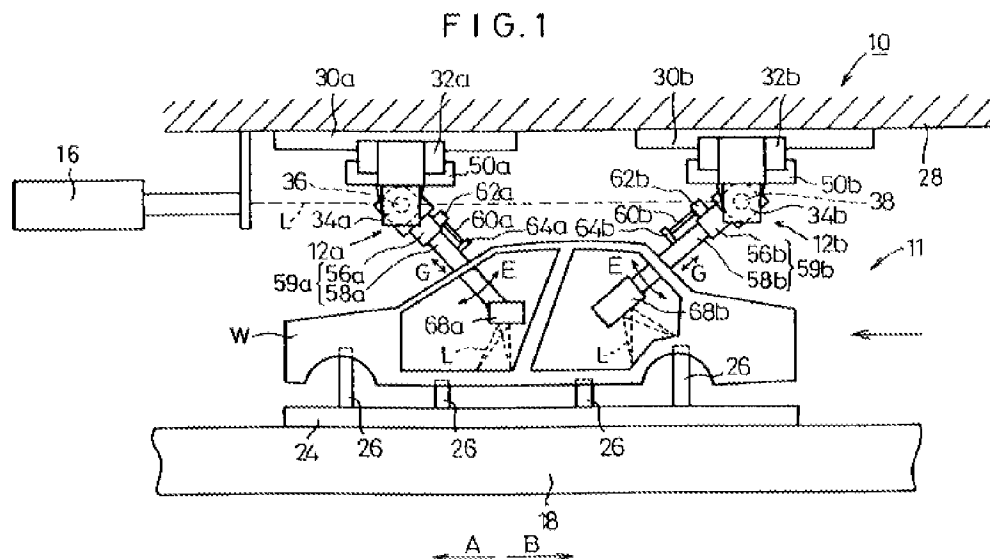
31. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aheel in view of lehisa and Maruyama et al (US 6100497).

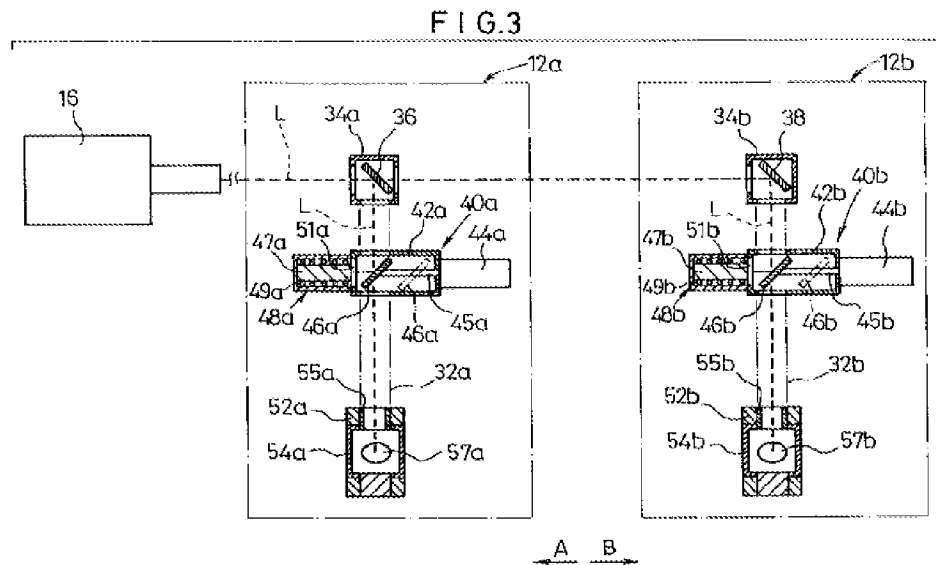
Aheel in view of lehisa discloses a plurality of manipulators (RB1 to RB8-fig.1 from claim 10) with associated laser tools (TL1 to TL8-fig.1 from claim 10) but fails to disclose wherein a common laser source can be switched by said control to said different laser tools.

Maruyama et al (hereinafter Maruyama) discloses a method and apparatus for welding a workpiece (W) such as an autobody using a single laser source (16), a laser

Art Unit: 3742

tool (68a) (i.e. scanning welding head) connected to welding robot (12a), and a laser tool (68b) connected to welding robot (12b) (Maruyama-col.5, lines 7-25 and refer to fig.1 below for all reference characters). Maruyama discloses a shutter mechanism (40a) corresponding to welding robot (12a) and a shutter mechanism corresponding to welding robot (12b) (refer to fig.3 below for all numeral references). Maruyama also discloses that shutter mechanisms (40a,40b) operate to either allow/enable or block/prevent the laser beam (L) generated from the laser source (16) from being supplied to the welding head (68a) of welding robot (12a) and welding head (68a) of welding robot (12b) (Maruyama-col.6, lines 19-23; col.6, lines 58-67 and refer to fig.1 and/or fig.3 below for all reference characters). As a result, it would have been obvious to one of ordinary skill in the art to conclude that the common laser source (16) is controlled in the sense that either welding heads (i.e. welding tools) will receive said laser beam from said laser source.





Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Maruyama's common laser source into Aheel in view of lehisa's device so that a common laser source can be assigned to said different laser tools.

Conclusion

32. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO 892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MAYA CLARK whose telephone number is (571)270-5605. The examiner can normally be reached on monday through friday, 10 am to 6:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, TU HOANG can be reached on (571)272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3742

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MAYA CLARK/

Examiner, Art Unit 3742

/TU B HOANG/

Supervisory Patent Examiner, Art Unit 3742